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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/920,713 | 08/03/2001 | Takashi Ohsumi | IIZ.003D2 | 5059 |

7590 04/17/2003
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| | |
|--------------------|--------------|
| EXAMINER | |
| TOLEDO, FERNANDO L | |
| ART UNIT | PAPER NUMBER |

2823
DATE MAILED: 04/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|-----------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/920,713 | OHSUMI, TAKASHI |
| | Examiner | Art Unit |
| | Fernando Toledo | 2823 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 03 February 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 21-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 21-27 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. 08/959,667.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 21 – 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frye et al. (U. S. patent 5,534,465) in view of Yamada et al. (U. S. patent 5,864,178).

In re claims 21 and 25, Frye in the U. S. patent 5,534,465; figures 1 – 5 and related text, discloses fabricating a semiconductor substrate 20 having a first surface in which a semiconductor integrated circuit is formed (Figure 4); the semiconductor substrate including a conductive layer 36 formed on the first surface thereof which is connected to the semiconductor integrated circuit and including a base member 35 of insulating material arranged between the first surface and the conductive layer; the base member including a first surface facing the first surface of the semiconductor substrate and a second surface opposite the first surface of the base member (Figure 4); the conductive layer having an extended portion extending on the surface of the base member (Figure 4); providing a connection substrate 40 on which the semiconductor substrate is to be mounted; placing the semiconductor substrate so that the first surface of the semiconductor substrate faces the connection substrate (Figure 4); connecting the extended portion of the conductive layer to the connection substrate (Figure 4).

Frye does not show supplying a seal member in a space between the semiconductor substrate and the connection substrate.

Yamada in the U. S. patent 5,864,178; figures 1 – 79 and related text discloses supplying a seal member in a space between the semiconductor substrate and the connection substrate to reduce the shear strain γ_{\max} to be generated at the bump electrode (Column 1, Lines 36 – 67 and Column 2, Lines 1 – 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to supply a seal member in a space between the semiconductor substrate and the connection substrate, in the invention of Frye, since, as taught by Yamada, it reduces the shear strain γ_{\max} to be generated at the bump electrode.

3. In re claim 22, Frye discloses wherein the first surface of the semiconductor substrate is placed to face the connection substrate using a face down technique (Figure 4).
4. In re claim 23, 26 and 27, Frye in view of Yamada shows wherein the base member and the seal member are made of a same material having a same thermal expansion (Yamada, Column 56, Lines 27 – 46 and Column 57, Lines 31 – 48).
5. In re claim 24, Frye discloses wherein the conductive layer and the base member constitute an electrode (Figure 4).

Response to Arguments

6. Applicant's arguments with respect to claims 21 and 25 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant contests that the base member and sealing member of Yamada do not meet the limitations of claim 23.
8. Examiner respectfully submits that claim 23 is met by the disclosure of Yamada, since Yamada discloses that the sealing member should have 20 – 70% by weight of filler depending on the specifics for the chip (Column 6, Lines 19 – 33) and that's what varies the thermal coefficient by $5 \times 10^{-6} \text{ }^{\circ}\text{C}^{-1}$ (Column 56, Lines 47 – 50 and Column 57, Lines 30 – 47).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2823

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando Toledo whose telephone number is 703-305-0567. The examiner can normally be reached on Mon-Fri 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



George Fourson
Primary Examiner
Art Unit 2823



FToledo
April 8, 2003